# THE MAURITIUS ECONOMIC COMMISSION

The Mauritius Economic Cemmission to which reference was made in the last issue of La Revue Agricole has held six meetings in November and December.

The work of the Economic Commission is for the moment mainly concentrated on a study of the various economic problems of the colony by technical committees of which 14 have been appointed. The committees, a list of which is given below base their work on memoranda and directives received from the Commission.

Two of these committees (Nos. 1 & 2) under the chairmanship of Mr. R. R. Follett-Smith who has had long technical experiences in the Colonial Agricultural Service and in recent years has been Director of Booker Brothers, Mr Connell & Co. Mr Follett Smith left the colony for British Guana on the 27th December when the Committees had almost completed their investigations and had drafted reports on the Efficiency of Sugarcane Production and on Agricultural Production other than Sugarcane. The draft reports are being considered by the Commission.

Other committees which have started work are :

No. 5 Co-operative Development
No. 6 Sugar Industry Finance
No. 7 Sugar Factory Efficiency
No. 8 Organisation and Planning of the Sugar Industry
No. 10 Island Industries other than Sugar
No. 12 Transport, rail road, coastwise and sea
No. 14 Mauritius Trade.

The following Technical Committees have been appointed :

COMMITTEE No. 1 — Cane Production

COMMITTEE No. 2 — Crops other than sugarcane

Mr. R. R. Follett Smith, Chairman (Member of Economic Commission)
Hon. A. Osman
Mr. O. Dookun
Hon. Dr. Ramgoolam
Mr. F. Quirin
Mr. W. Larché
Mr. C. Noel
Mr. G. R. Park

Mr. R. Maigrot
Mr. P. Halais
Mr. P. O. Wiehe — Rapporteur

Assessors ... Director of Agriculture and members of Department of of Agriculture.

## COMMITTEE No. 3

## Health and Welfare

G. Rozemont, Chairman (Member of Economic Commission).
Dr. Goupille
Dr. Lanier
Dr. Curé
Dr. Vellin
Mr. R. R. Gujudhur
Mr. L. N. Coombes
Mr. E. Jullienne
Mr. D. Luckeeranain
Mr. Henri Ythier

Assessors ... Director, Medical & Health Department
Director of Public Assistance
Director Statistics
Nutrition Officer
Secretary, Development and Welfare
Director, Public Works Department

## COMMITTEE No. 4

## Labour and Employment

Mr. R. Vaghjee, Chairman (Associate Member of Economic Commission).
Mr. L. de Froberville.
Mr. E. Jullienne
Mr. L. de Chazal
Mr. R. Goburdhun
Lt. Col. R. Deane, C.B.E.
Mr. M. Jugdumbee
Mr. R. Seeneevasen
Mr. P. Rozemont
Mr. P. Algoo

Assessors ... Department of Labour
Director of Statistics
Controller of Supplies.

## COMMITTEE No. 5

### Co-operative Development

Mr. J. N. Roy, Chairman (Member of Economic Commission)
Mr. A. Beejudhur
Mr. M. Nucheddy
Mr. Hubert Gopal
Mr. Gabriel Broudou
Mr. D. Reetoo (St. Julien d'Hotman)
Mr. J. Chundunsingh
Mr. M. Smith
Mr. R. de Spéville
Mr. R. Rousset
Mr. Gentil

Assessors ... Registrar of Co-operative Credit Societies
Land Settlement Officer.

## COMMITTEE No. 6 — Sugar Industry Finance

## COMMITTEE No. 13 — Island Finance

Hon. A. Raffray, K.C., Chairman
Mr. Antoine Harel
Mr. R. Adam
Mr. R. Lamusse
Mr. W. Marsh
Mr. A. T. Francis
Mr. P. Piat
Mr. R. Maigrot
Hon. A. Osman
Mr. R. A. Ellefsen — Rapporteur

Assessors ... Financial Secretary
Poll Tax Commission
Mr. C. G. Gibson
Registrar of Co-operative Credit Societies

## COMMITTEE No. 7

### Factory Efficiency

Mr. C. J. H. Penning, Chairman (Member of Economic Commission)
Mr. C. Noel
Mr. A. Wiehe

Mr. A. Bérenger
Mr. G. R. Park
Mr. M. Paturau
Mr. Francis N. Coombes
Mr. H. Genève
Mr. O. d'Hotman de Villiers
Mr. Bertin Herbu
Mr. C. Coudou

Assessors ... Sugar Technologist, Department of Agriculture
Registrar Central Board
Mr. Vaudin, Factory Inspector.

## COMMITTEE No. 8

### Organisation and Planning of Sugar Industry

Hon. A. L. Nairac, Chairman (Member of Economic Commission)
Mr. P. Hein
Mr. G. P. Langlois
Mr. F. Leclézio
Mr. A. Harel
Mr. L. G Garthwaite
Mr. P. Espitalier Noël
Mr. J. Lagesse
Mr. G. R. Park
Mr. G. Sauzier
Mr. C. J. H. Penning

Assessors ... Registrar Central Board

## COMMITTEE No. 9

### Overseas Marketing of Sugar

Mr. F. Leclézio, Chairman (Member of Economic Commission.)
Mr. H. R. Ebbels
Mr. E. C. Rogers
Hon. H. G. Robinson, C.B.E.
Mr. A. Harel
Mr. P. Piat
Mr. A. Gujadhur
Mr. C. S. Mahomed
Mr. G. Sauzier
Mr. P. Adam, jr.

Assessor ... Comptroller of Customs.

## COMMITTEE No. 10

### Mauritius Industries other than Sugar

Mr. A. Wiehe, Chairman (Associate Member of Economic Commission)
Mr. E. Maingard
Mr. J. Pilot
Mr. A. Leclézio
Mr. A. Martin
Mr. A. Toussaint
Mr. G. Taylor
Mr. R. Merven
Mr. L. Couacaud
Mr. A. Carles
Mr. L. de M. Enouf
Mr. Jean Rey
Mr. A. Rey
Mr. P. Poilly
Hon. R. Hein
Mr. P. Laurent

Mr. P. O. Wiehe : Rapporteur

Assessors : Members of Department of Agriculture
Dr. J. Maingard, M.B.E.

## SUB-COMMITTEE No. 10

### Water resources of Mauritius available for Electric power.

Mr. C. J. H. Penning, Chairman
Mr. H. Génève
Mr. R. Desmarais
Mr. E. Belcourt
Mr. P. P. Dalais
Mr. L. Le Roy
Mr. X. Kœnig
Mr. A. Darné
Mr. J. G. Rozemont
Mr. M. Paturau

Assessor : Waterworks Engineer, Public Works Department,
Department of Electricity & Telephones.

## COMMITTEE No. 11

### Foodstuffs Requirements and Supplies : Nutritional Needs of Mauritius

Hon. A. L. Osman, Chairman (Member of Economic Commission.)
Mr. H. Ramnarain
Mr. Benjamin David
Dr. Goupille
Mr. André Darné
Mr. Antoine Berenger
Mr. L. N. Austin
Mr. R. Merven
Mr. A. Espitalier Noel, C.M.G.
Mr. R. Reetoo (small planter).

ASSESSORS : Controller of Supplies
Director of Health
Director of Statistics
Nutrition Expert
Food Production Board
Department of Agriculture.

## COMMITTEE No. 12

### Transport (Rail, Road, Coastwise and Sea)

Mr. L. de Chazal, Chairman (Member of Economic Commission).
Mr. L. Maurel
Mr. A. Bonieux
Mr. H. Génève
Mr. P. Maurel
Mr. L. H. Garthwaite
Mr. P. Chasteau de Balyon
Mr. L. Rumnuth
Hon. P. Lagesse
Mr. P. d'Arifat
Mr. H. R. Ebbels
Mr. E. Desvaux de Marigny
Mr. C. H. Penning
Major D. Taylor

Assessors ... General Manager of Railways
Accountant Railway Department
Transport Division Police Dept.

Magistrate to Industrial Court
Public Works Department
Board of Commissioners for Beau-Bassin, Quatre-Bornes Curepipe.

COMMITTEE No. 14

## Mauritius Trade

Hon. H. G. Robinson, C.B.E., Chairman
Mr. R. D. Stein
Mr. Ramawad Sewgobind
Mr. Jean Ah Chuen
Mr. L. J. Hein
Mr. Edouard Piat
Mr. R. H. Maingard
Mr. G. J. M. Schilling
Mr. P. R. Adam
Mr. André Espitalier Noël, C.M.G.
Mr. Karrimbhai Essajee Adamjee
Mr. Abdool Sattar Noormahomed
Mr. Gunness Gujudhur
Mr. Lai Fat Fur

Mr. R. A. Ellefsen : Rapporteur

Assessors : Controller of Supplies
Comptroller of Customs
Director of Statistics
Consul of France (Mr H. Paturau)

# SUMMARY OF ANNUAL REPORT OF THE SUGARCANE RESEARCH STATION FOR 1946.

The introduction to the Report written by the Officer in charge of the Station emphasises the dominant part played by the cane varieties produced by the Station in the Sugar Industry of Mauritius. The variety M. 134/32, in particular, has proved to be a cane of outstanding merit for Mauritius conditions. The six new varieties B. 3337, B. 3439, B. 34104, B. 37161, B. 37172 and B. 4098 received from Trinidad successfully completed their quarantine period and rapid methods of propagation have been utilized to multiply these varieties in order to have material for adequate trials. A new development was the authorization obtained for the appointment of two additional Field Demonstrators to carry out extension work amongst the small planters.

The Acting Geneticist reports a very favourable breeding season ; most of the crosses contemplated were successfully carried out and an ample number of seedlings were obtained. For the first time seedling populations were planted out at the Plaines Wilhems Station on the boundary of Hermitage and Côte d'Or. Special randomized blocks have been established at the three experiment stations in order to study the performance of the progeny of various crosses under different climatic conditions.

The main line of research of the Chemical Division as in the previous year has been directed towards the rational fertilization of sugarcane. Twenty fertilizer trials are in progress — eighteen of them being 3 N × 3 P × 3 K factorial experiments — i.e. three doses of nitrogen, potash, and phosphate in all combinations with each other giving in all 27 plots for each trial. The doses of fertilizers used in kilos per arpent were as follows :

| | 0 | 1 | 2 |
|---|---|---|---|
| Nitrogen (N) ... ... | Nil | 34 | 68 |
| Phosphate ($P_2O_5$) ... ... | Nil | 30 | 60 |
| Potash ($K_2O$) ... ... | Nil | 35 | 70 |

Leaf samples were taken from all these trials, weighed and analysed for N, $P_2O_5$ and $K_2O$ content and at harvest time composite samples of cane for juice analyses were taken from the various plots. Good responses to Nitrogen were obtained in almost all the trials — the response being considerably greater in ratoons than in plant canes. The response to potash and phosphate is less pronounced and the number of localities showing a response is less than is the case with Nitrogen.

It has been shown in these trials that the actual weights of the leaf samples taken from the various treatments at the time of active growth are highly correlated with final yields e.g. in the case of the three doses of nitrogen the comparative yield of the 0, 1, 2 doses of nitrogen in virgins were in the ratio 100 : 111 : 113 whereas the index of vegetative growth as measured by the weight of the leaf samples were in the ratio of 100 : 111 : 114.

For ratoons the corresponding ratios were 100 : 117 : 129 for yields and 100 : 119 : 130 for vegetative growth index.

It is believed that the vegetative growth index may be at least as accurate if not more so than final yields as an index of fertilizer response in that complications arising out of lodging and subsequent rat damage often affect the yields of the highest yielding plots.

Leaf punch samples from the mesophyll of the leaves are now used for foliar diagnosis analyses instead of samples of whole leaves. The data indicate that with contents of 2.20 o/o N, 0.50 o/o $P_2O_5$ and 1.5 to 1.6 o/o $K_2O$ in the dry matter of the leaf punch samples for the variety M. 134/32 corresponding to contents of 1.45 o/o N, 0.45 o/o $P_2O_5$ and 2.5 o/o $K_2O$ in the whole leaf, optimum growth, so far as the major fertilizers are concerned, is ensured.

Deficiency symptoms of potash and phosphate have occurred in low fertilization plots at Réduit and these symptoms have been correlated with leaf analysis.

Analyses of whole plants indicate that with a cane crop of 30 tons cane per arpent loss of Nitrogen, $P_2O_5$ and $K_2O$ if only the cane is removed, is 18 kilos, 12 kilos and 62 kilos respectively per arpent but if green tops and trash are also removed the loss of N, $P_2O_5$ and $K_2O$ is 49 kilos, 24 kilos and 138 kilos respectively.

Samples of molasses from 21 mills were analysed for N, $P_2O_5$ and $K_2O$ — the results showed an average content of 0.52 o/o N (range 0.32 o/o — 0.76 o/o), 0.25 o/o $P_2O_5$ (range 0.12 o/o—0.35 o/o) and 5.14 o/o $K_2O$ (range 3.36 o/o — 7.6 o/o). The bearing of these results particularly on potash conservation is discussed.

The Botanical Division has been concerned mainly with weed control investigations — a survey of the weed population of the colony has been completed and the island distribution of the most important weed species is now established. The results of some 150 experiments on the chemical control of various weed species are summarized and the most efficient methods of controlling these weeds are given. The general conclusions are that the growth promoting substances Methylchlorophenoxy acetic acid and 2 — 4 Dichlorophenoxy acetic acid are likely to be of considerable value in the eradication of many noxious weed species. Certain other weeds are better controlled with herbicides such as Sodium chlorate and the Dinitro Cresol derivatives, while for a small class of weeds a really effective herbicide still remains to be found.

The detailed description of the reactions of individual weed species to the herbicides tested should be of considerable value to the planting community in the rational use of these herbicides.

Of considerable interest are the cooperative investigations on the effect of organic mercury compounds carried out by the Botanical Division of the Sugarcane Research Station and the Plant Pathology division of the Department of Agriculture. Of six brands of organo-mercurial disinfectants tested, that sold under the trade name of Aretan was outstandingly superior, having, in addition to its control of Pineapple disease, a remarkable stimulating effect on cane growth. These results confirm those obtained by Dr. Mc Martin under South African conditions. There is little doubt that the practice of dipping both ends of the cane cutting in a 1 o/o solution of Aretan should be adopted by the planting community for all new plantations. The data show that the practice of presoaking in lime water, which has been of outstanding value under Mauritius conditions, may now be replaced by dipping in Aretan, with superior results. Data are given in this part of the report on the accumulation of sugars and mineral substances in the cane crop under the conditions obtained on twelve representative estates scattered throughout the climatic zones of the island.

The rate of increase in the water content of the crop on a per acre basis reached its maximum at the same time as the maximum rate of increase in length of the cane. It had reached zero value by the beginning of August, i.e. by this time the whole of the water taken up by the crop was used in the transpiration process and none was retained for the formation of new tissues. Of the total amount of dry matter produced by the crop, the proportion accumulated as sucrose increased from 11.3 o/o in February to 96.5 o/o in July.

The ratoon crop had absorbed 53.5 o/o of its total nitrogen 40 o/o of its $P_2O_5$ and 45.7 o/o its $K_2O$ at the age of three months. This indicates once more the desirability of early fertilization.

The nutrition of the ratoon crop on these estates was correlated with the optimum nutrition as revealed by the foliar diagnosis technique and it has been shown that, in general, there was a deficiency of Nitrogen, indicating that the amount of nitrogen fertilizer made available to the ratoon crop was not sufficient to produce maximum yields in this particular year.

Sugarcane Research Station,
Réduit,
24.10.47

H. EVANS
Ag. Officer-in-charge,
Sugarcane Research Station.

# EXPERIMENTS ON THE TREATMENT OF CANE SETTS AT PLANTING UNDER MAURITIUS CONDITIONS.

H. EVANS & P. O. WIEHE.

(Summary of Bulletin No. 19 of the Sugarcane Research Station.)

## Introduction.

The major causes of failure of cane setts to germinate under Mauritius conditions are :

(a) Pineapple disease, caused by the fungus *Ceratostomella paradoxa*

(b) Chlorotic streak, caused by a virus,

(c) Red rot, caused by the fungus *Physalospora tucumanensis*.

Of these three diseases Pineapple disease is the most important and is often the cause of serious economic losses particularly under conditions of drought and in the cooler uplands of the island.

Chlorotic streak, which was first reported in Mauritius by Shepherd (1931) is successfully controlled by the hot water treatment of cuttings.

The red rot organism, seldom invades cuttings after planting and in cases where failure due to this cause occurs, the setts are infected before planting. Pretreatment of cuttings with fungicides is of no avail in the control of chlorotic streak and red rot.

Previous work had shown that Pineapple disease incidence could be controlled to varying degree by treatment with Bordeaux or Burgundy mixture, by presoaking in lime water and by treatment with the organo mercurial compound Ceresan.

The present work includes data on the relative efficiency of various organo-mercurials on the Pineapple disease reactions and on growth in different varieties, alone and in combination with other treatments under a wide range of environmental conditions.

## Experimental results.

### I. *The effect of organo-mercurials and lime on germination, Pineapple disease incidence and growth under various experimental conditions.*

The treatments Aretan, Agrosan and Ceresan at 1% and 2% con-

centration, and dipping the cut ends in dry lime were compared with untreated controls for the two varieties M. 134/32 and M. 112/34 under all combinations of irrigated and non-irrigated and artificially inoculated with a spore suspension of the Pineapple disease organism and non-inoculated conditions.

*Results.* (a) Artificial inoculation of the soil with the spores of the Pineapple disease organism produced a significant increase in the incidence of the disease. Percentage germination, total and mean length of shoots showed a decrease but the reduction did not reach the level required for significance.

(b) Irrigation significantly decreased the percentage of Pineapple disease but the increased growth of the young shoots due to irrigation was proportionately considerably greater than would be expected from the reduction in the incidence of the disease, indicating that the direct effect of irrigation on growth was greater.

(c) There was no significant difference in the percentage infection by Pineapple disease in the two varieties but the mortality of cuttings was considerably higher in M. 112/34.

(d) There were differences in the efficacy of the various treatments in protecting the cuttings from attack but the growth measurements showed that there were factors other than direct protection of the cuttings operating. Lime, which was markedly inferior to Ceresan and Agrosan in controlling Pineapple disease nevertheless was equal or superior to these substances in its effect on germination and growth of the cuttings. Aretan which was not significantly better than the 2 o/o concentrations of Ceresan and Agrosan in its control of Pineapple disease had an enormous superiority over these substances with respect to germination and growth.

(e) Irrigation had a considerably greater effect on total length of shoots in the cuttings treated with lime and with Aretan than in those treated with Ceresan and Agrosan. Indeed the effect of irrigation on the cuttings treated with the latter substances was no greater than it was on the control cuttings. On the other hand irrigation did not differentially affect the incidence of Pineapple disease in the various treatments.

(f) There was some evidence that when the population of the pathogen was artificially increased by artificial inoculation, 2 o/o Aretan was slightly more effective in reducing the incidence of the disease than 1 o/o Aretan.

## II. *The influence of environmental conditions and time of planting on the efficacy or organic mercury compounds.*

Experiments were carried out in the dry districts of Labourdonnais S.E. and Sottise S.E. to test 1 o/o Ceresan, 1 o/o Aretan, 1 o/o Agrosan and dry lime against untreated controls using the varieties M. 112/34 and M. 134/32 respectively. Similar experiments were carried out at Gros

Bois and La Barraque (Savinia S.E.) with the exception that soaking in lime water for 24 hours replaced the dry lime treatment. In addition experiments in the form of 4 × 4 Latin squares testing 1 o/o Aretan, 1 o/o Ceresan and 1 o/o Agrosan against untreated controls were planted every month at Henrietta (Réunion S. E.) from August 1946 until August 1947.

*Results.* (a) *The Labourdonnais and Sottise experiments.*— There was a high correlation between the incidence of Pineapple disease and the germination and growth of the cuttings. There was little to choose between the three organic mercury compounds so far as protection from Pineapple disease was concerned. Even lime was effective in reducing the incidence of disease in these trials. Aretan was considerably superior to the other treatments in promoting shoot growth. Agrosan was the least effective in this respect.

*The La Barraque and Gros Bois experiments.*— The results for these trials were also in close agreement with those at Labourdonnais and Sottise. There was a highly significant decrease in pineapple disease as compared to the untreated controls in all treatments, though at Gros Bois lime water was not quite as effective as the organic mercury compounds. At La Barraque all treatments produced a significant increase in the number and total length of shoots — Aretan being superior to the other treatments, but at Gros Bois only Aretan produced a significant increase in growth.

All the above experiments indicate that Aretan, and lime water to a lesser extent, have a stimulating effect on growth which is not shown by Ceresan and Agrosan, the latter substances producing their beneficial effects purely through protection against Pineapple disease.

(c) *The Henrietta experiments.*— In these experiments there were considerable differences in the incidence of Pineapple disease in the control plots in the successive monthly plantings, these differences being well correlated with rainfall. When the weather was dry for a month following planting — the incidence of disease was high, when there was adequate rainfall the incidence of disease was low. Responses to organic mercury compounds were greatest when incidence of Pineapple disease was highest. Aretan was at least as effective as Agrosan and Ceresan in controlling Pineapple disease under conditions of adequate rainfall following planting but was considerably superior to these substances under very dry conditions. Over the whole series of experiments Aretan was considerably superior to the other treatments in promoting growth of the young shoots. The relative influence of Aretan treatment in promoting shoot growth appears to be greater than would be expected from its comparative efficacy in protecting the cuttings from infection with Pineapple disease as is shown by the following data.

| Treatment | Percentage reduction in Pineapple disease | Percentage increase in length of shoots per germinated cutting |
|---|---|---|
| Agrosan ... ... | 86% | 7.2% |
| Ceresan ... ... | 85% | 9.4% |
| Aretan ... ... | 92% | 19.8% |

III. *The comparative value of range of organic mercury compounds on Pineapple disease incidence and growth of several Sugarcane varieties and their interaction with a preplanting applications of molasses.*

A large scale experiment was laid down at Sans Souci S.E. to test the organic mercury compounds* Ceresan, Harvesan, Verdasan, Aretan, Abavit and Agrosan G on the five varieties M. 171/30, M. 134/32, M. 165/38 M. 63/39 and M. 76/39 with and without a preplanting application of 4 tons of molasses per acre.

*Results.*— All the organic mercury compounds tested reduced mortality due to Pineapple disease to a marked extent, the decrease being 87 o/o with Aretan and Ceresan, 86 o/o with Abavit, 83 o/o with Agrosan, 80 o/o with Harvesan and 76 o/o with Verdasan.

Aretan, Ceresan and Abavit were thus somewhat more effective than the remaining compounds. The application of 4 tons molasses per arpent ten days before planting reduced the percentage Pineapple disease over the whole experiment by 24.7 o/o.

In this experiment the varieties showed a marked differential susceptibility : the varieties M. 134/32 and M. 63/39 being considerably more resistant to the disease than the other varieties ; M. 76/39 was the most susceptible. Apart from Pineapple disease a fairly high proportion of the cuttings failed to germinate on account of incipient infection with chlorotic streak disease. Failure due to this cause amounted to 6.8 o/o as compared te 15.6 o/o due to Pineapple disease in all the control plots. Shoot counts made after 6 weeks and after 10 weeks agreed closely with the counts of cuttings infected with Pineapple disease.

* — These substances were obtained through the courtesy of Dr. A. Mc Martin of the South African Sugar Experiment Station and were used at the concentrations found by him to be optimum under South African conditions.

| Treatment | Mean number of shoots per plot (all varieties) | |
|---|---|---|
| | After 6 weeks | After 10 weeks |
| Controls ... ... | 110 | 229 |
| Ceresan ... ... | 143 | 315 |
| Harvesan ... ... | 139 | 315 |
| Aretan ... ... | 169 | 320 |
| Abavit ... ... | 143 | 300 |
| Agrosan ... ... | 127 | 300 |
| Verdasan ... ... | 139 | 307 |

It will be seen that the treatments resulted in increases in the number of shoots at 10 weeks ranging from 30 o/o for the least effective to 55 o/o for Aretan — which was the most effective.

Aretan was thus the best treatment from the aspect of pineapple disease control and in the number of shoots produced. Whereas Ceresan and Abavit were almost equally effective in controlling the disease, they were much less effective in causing emergence of shoots. This experiment also gave indications that there was a varietal difference in the degree of tolerance to the disease once the cutting had become infected.

### IV. *The effect of Aretan on Pineaple disease reaction and growth in different varieties.*

The data on varietal differences noted at Sans Souci made it desirable to have a more conclusive test of varietal reactions and a further experiment was laid down at Réduit using the varieties M. 171/30, M. 134/32, M. 112/34, M. 165/38, M. 63/39 and M. 76/39. The treatments were confined to a straight issue between Aretan and untreated controls but the blocks were arranged in such a manner as to test the residual effect of artificial inoculation with the Pineapple disease organism made three months previously.

***Results.***— The most important aspects of the results are shown in the following table.

| Variety. | % of cuttings germinated. | | % infection with Pineapple disease. | | % mortality due to Pineapple disease. | | Number of shoots | |
|---|---|---|---|---|---|---|---|---|
| | Aretan | Controls | Aretan | Controls | Aretan | Controls | Aretan | Controls |
| M. 171/30 ... | 94.0 | 70.0 | 1.75 | 28.3 | 1.75 | 28.3 | 1038 | 625 |
| M. 134/32 ... | 88.0 | 56.5 | 8.50 | 29.0 | 2.00 | 29.0 | 516 | 298 |
| M. 112/34 ... | 79.5 | 33.0 | 5.50 | 40.5 | 5.50 | 40.5 | 582 | 239 |
| M. 165/38 ... | 96.0 | 71.5 | 38.50 | 72.0 | 1.00 | 28 5 | 914 | 644 |
| M. 63/39 ... | 84.0 | 90.0 | 2.00 | 26.5 | 0.00 | 11.0 | 1086 | 1049 |
| M. 76/39 ... | 98.0 | 78.0 | 12.00 | 74.0 | 2.00 | 22.0 | 1020 | 645 |

The mean percentage germination was 89.92 o/o for the Aretan treated plots and 66.56 o/o for the untreated controls : 11.37 of the Aretan treated cuttings had become infected with Pineapple disease as compared to 45.05 o/o in the controls. The percentage of cuttings which died from the disease, however, was only 2.04 o/o with Aretan as compared to 26.04 o/o n the untreated controls.

The differential varietal response is very clearly shown particularly in the reaction of the varieties following infection. It will be seen from the above table that the percentage incidence of the disease is high in some varieties particularly M. 165/38 and M. 76/39 but in these varieties the percentage mortality resulting from infection is relatively low even when not treated with Aretan. These varieties would therefore, be described as susceptible but tolerant to the disease. In contrast, the variety M. 112/34 showing a relatively high percentage infection, shows also 100 o/o mortality of the infected cuttings. This variety is thus extremely susceptible to the disease. The variety M. 63/39 not only shows a high resistance to infection, but in addition shows considerable tolerance when infected — the mortality amongst the infected cuttings being under 50 o/o. It is clear that percentage mortality from Pineapple disease is a considerably more important factor from the practical standpoint than the percentage infection.

Even although three months had elapsed since certain blocks were artificially inoculated with a spore suspension of the Pineapple disease organism, the effect of this inoculation was still apparent as is seen from the table below :

| | % Germination | % Incidence of Pineapple disease | % Mortality due to Pineapple disease |
|---|---|---|---|
| Inoculated ... ... | 74.16 | 35.85 | 20.52 |
| Not inoculated ... | 82.32 | 20.68 | 7.56 |

The increase in the percentage mortality in the different varieties as a result of inoculation was as follows: M. 171/39, 13.2 o/o; M. 134/32, 11.0 o/o; M. 112/34, 32 o/o; M. 165/38, 9.5 o/o; M. 63/39, 4.0 o/o; M. 76/39, 12.0 o/o.

It is of interest to note that the variety which suffered most from the inoculation was the susceptible variety M. 112/34 whereas the one which suffered least was the resistant variety M. 63/39. All varieties, however, had a higher mortality rate in the inoculated plots. From a practical point of view this fact is of importance as it signifies that the level of population of the pathogen in the soil is related to the intensity of the disease, in other words varieties which may normally offer some resistance to the pathogen may show a greater susceptibility to the disease when the organism is more abundant in the soil.

Aretan produced highly significant increases in the total length of shoots, in the mean length of shoots per germinated cutting, in the total number of shoots and in the mean length of the individual shoot. The growth responses may be largely explained on the basis of susceptibility of the different varieties to the disease and the degree of tolerance to the disease after infection has occurred.

V. *A comparison of the effect of lime water and Aretan and their interaction with molasses.*

This experiment, which was carried out at Réduit, consisted of the following treatments (a) soaked in saturated limewater for 24 hours; (b) treated with 1 o/o Aretan; (c) treatment (a) followed by treatment (b); (d) untreated controls. In addition half of each plot was given 5 tons molasses per arpent, ten days before planting, the remaining half not receiving molasses. A single variety M. 76/39 was planted. The effect of the treatments on the germination of the cuttings is shown in the table below.

Number of cuttings germinated out of 240 planted

| | Molasses | No molasses | Totals |
|---|---|---|---|
| Lime water alone ... | 216 | 218 | 434 |
| Aretan alone ... | 225 | 220 | 445 |
| Lime water + Aretan.. | 224 | 228 | 452 |
| Controls ... ... | 196 | 167 | 363 |

All treatments produced a significant increase in the number of germinated cuttings, there being no difference between the treatments. Molasses significantly increased the number of germinated cuttings in the control plots but not in any of the treated plots.

The corresponding effects on infection and mortality by pineapple disease are given below :

| Treatments | % Incidence of Pineapple disease | % Mortality due to Pine-apple disease | Increase or decrease in % Incidence caused by Molasses | Increase or decrease in % Mortality caused by Molasses |
|---|---|---|---|---|
| Lime ... ... ... | 20.21 | 4.58 | + 7.93 | + 0.82 |
| Aretan ... ... | 15.31 | 1.25 | — 2.49 | Nil |
| Lime + Aretan ... | 20.62 | 2.06 | + 9.91 | + 3.33 |
| Controls ... ... | 53.53 | 21.04 | — 23.67 | — 11.33 |

All the three treatments have significantly reduced Pineapple disease both as regards percentage incidence and the percentage mortality. Although not significantly established, there is an indication that Aretan was more effective in this respect than lime. In agreement with the germination results molasses has significantly reduced the percentage incidence and the percentage mortality only in those cuttings that were not otherwise treated, i.e. in the controls. The effect of molasses is smaller than that obtained with Aretan and with lime and is completely masked when the cuttings are protected against fungal invasion by a fungicide.

In this experiment separate data were kept for the shoots arising directly from the cuttings and for those arising from these shoots. These are referred to as primary shoots and tillers respectively. A selection of these data are given in the following tables.

| Treatments | Molasses | | | No Molasses | | |
|---|---|---|---|---|---|---|
| | No. of shoots | Total length | Mean length | No. of shoots | Total length | Mean length |
| *Primary Shoots* | | | | | | |
| Lime ... ... | 347 | 4531 | 13.1 | 355 | 4411 | 12.5 |
| Aretan ... ... | 355 | 4959 | 14.0 | 356 | 4668 | 13.2 |
| Lime + Aretan ... | 359 | 4543 | 12.5 | 374 | 4730 | 12.7 |
| Controls ... ... | 288 | 3785 | 13.2 | 237 | 2858 | 12.1 |
| *Tillers* | | | | | | |
| Lime ... ... | 218 | 786 | 3.65 | 158 | 517 | 3.25 |
| Aretan ... ... | 285 | 1358 | 4 95 | 221 | 858 | 3.85 |
| Lime + Aretan ... | 224 | 866 | 3.90 | 232 | 754 | 3.15 |
| Controls ... ... | 194 | 725 | 3.75 | 162 | 615 | 3.80 |

| Total length of primary shoots per plot. | | Total length of primary shoots per plot with and without molasses. | | Mean length of primary shoots per germinated cutting. | |
|---|---|---|---|---|---|
| Lime ... | ... 186.29 | With molasses | ... 186.50 | Lime ... | ... 20.70 |
| Aretan ... | ... 200.52 | Without molasses | ... 173.59 | Aretan ... | ... 21.63 |
| Lime + Aretan | ... 193.19 | | | Lime + Aretan | ... 20.52 |
| Controls ... | ... 138.40 | | | Controls ... | ... 18.21 |

| Treatments. | Mean number of tillers per plot | Total length of tillers per plot | Mean length of tillers per germinated cutting | Mean length of individual tiller |
|---|---|---|---|---|
| Lime ... ... | 7.83 | 27.14 | 3.0 | 3.46 |
| Aretan ... .. | 10.54 | 46.16 | 5.0 | 4.40 |
| Lime + Aretan ... | 9.50 | 33.74 | 3.6 | 3.53 |
| Controls ... ... | 7.42 | 27.91 | 3.7 | 3.77 |

All the treatments produced a significant increase in the number and length of primary shoots over the controls but the treatments were not significantly different from each other. Molasses produced an increase in the total length of primary shoots in the control plots only.

With respect to tiller formation, lime alone had no significant effect; Aretan, on the other hand, produced significant increases in number, total length, mean length per germinated cutting and in the mean length of the individual tiller. Pre-treatment with lime seems to have largely negatived the effect of Aretan.

Molasses caused a significant increase in the number and total length of tillers. The increase in the total length of tillers was general for all the treatments, although it was somewhat greater in the Aretan treatment than in the remaining treatments and controls. The influence of molasses on tiller formation is possibly a nutritional effect since it affects all treatments, whereas its effect on germination and on number of primary shoots was confined to cuttings which were otherwise untreated.

## VI. *The effect of treatment of cuttings with Organic mercury compounds and lime on the yield of cane at harvest.*

To date six of these trials have been harvested: the results are summarized below, yields are given in tons per arpent.

| Locality and Variety | Ceresan | Aretan | Agrosan | Lime | Controls |
|---|---|---|---|---|---|
| Labourdonnais S. E. (M. 112/34) ... | 21.7 | 24.3 | 20.1 | 21.5 | 20.2 |
| Sottise S.E. (M. 134/32) .. | 25.6 | 27.6 | 25.8 | 25.4 | 24.4 |
| Gros Bois (M. 134/32) ... | 29.8 | 35.0 | 27.3 | 29.5 | 29.8 |
| Savinia (M. 134/32) ... | 31.9 | 35.1 | 30.8 | 33.9 | 31.7 |
| I Henrietta (Réunion S.E.) (M. 134/32 — tops) ... | 31.3 | 31.9 | 31.7 | — | 23.8 |
| II Henrietta (Réunion S.E. (M. 134/32— Body cuttings) ... ... | 28.7 | 29.5 | 30.3 | — | 25.9 |
| Mean yield for six trials... | 28.17 | 30.57 | 27.67 | 27.60 (4 trials) | 26.80 |

It is clear from these results that Aretan is superior to all other treatments in its effect on final yields and that the increase in yield produced is substantial in spite of the fact that recruiting or filling in of blanks was carried out in all these trials two to two and a half months after the planting of the original cuttings.

## Summary and conclusions.

The experiments carried out in Mauritius have confirmed Mc Martin's observations in Natal that Aretan is superior to all other organic mercury compounds tested, for the treatment of sugarcane cuttings.

Not only is it highly effective in protecting the cutting from Pineapple disease but in addition promotes shoot growth. The importance of having a uniform stand of young cane is widely appreciated, gappy stands are undoubtedly responsible for considerable losses. Since the other organic mercury compounds tested are almost, if not quite, as effective as Aretan in preventing Pineapple disease infection, it appears that the superiority of Aretan lies in its stimulatory effect on growth. Increases in yield averaging almost 4 tons per arpent have been obtained through the use of Aretan. In view of the low cost of treatment with Aretan, this result is highly remunerative and is even more so when the reduced expense of filling in blanks is considered.

From the few results available it does not appear that the beneficial results of lime water soaking and Aretan are additive : on the other hand, Aretan alone was somewhat more effective than lime water soaking followed by Aretan. However, further experiments may be necessary fully to substantiate this conclusion.

The practice of treatment with Aretan is already extending in Mauritius, and there is little doubt that for the benefit of the Sugar Industry it should be universally adopted by planters large and small.

# L'ILE MAURICE CONVIENT-ELLE A LA CULTURE DU " TUNG "

## Résumé du Rapport
de
Monsieur C. C. WEBSTER, Senior Agricultural Officer, Nyasaland.

L'Huile de " Tung " est extraite des graines de deux arbres originaires de Chine : l'*Aleurites Fordii* et l'*Aleurites montana.*

Pendant longtemps, cette huile qui trouve son emploi dans la fabrication de la peinture, du vernis, du linoleum, etc., a été produite en Chine de plants poussant à l'état sauvage. La culture rationnelle du " Tung " est de date assez récente ; elle s'est développée surtout aux Etats-Unis d'Amérique après la guerre 1914-18 pour s'étendre, quelques années plus tard, à certains territoires de l'Empire Britannique, notamment au Nyasaland et au Sud Afrique, où l'on plante surtout l'*Aleurites montana* qui vient mieux que l'*A. Fordii* dans les climats chauds et humides.

Si l'on devait choisir entre ces plantes pour l'Ile Maurice, le choix s'arrêterait à l'*A. montana* dont le rendement en huile est plus élevé dans les climats semi-tropicaux.

L'*Aleurites montana* exige une pluviosité annuelle d'au moins quarante pouces d'eau bien distribuée et un hiver suffisamment froid pour contraindre la plante à jeter ses feuilles et à rester à l'état dormant pendant trois ou quatre mois. Cette plante vient mal là où l'hiver est trop doux. Quant au sol de prédilection il suffit qu'il soit acide, bien drainé et aussi profond que possible.

Etant donné la profusion de plants à fleurs mâles, l'on doit avoir recours au greffage en se servant uniquement de greffons provenant de plantes-mères à fort rendement. Les bons rendements ne s'obtiennent que dans des terroirs relativement riches et recevant des soins culturaux appropriés surtout dans les premières années qui suivent la plantation. L'espacement entre les plants étant d'environ vingt-cinq pieds, l'on fera des cultures intercalaires pendant les trois ou quatre premières années afin d'utiliser tout le terrain et réduire le coût de production. Après la quatrième année ces cultures seront enlevées afin de ne pas nuire aux jeunes arbres.

Pour être efficace l'extraction de l'huile doit être faite au moyen d'un outillage moderne complet qui coûte, malheureusement, assez cher. Par ailleurs, pour qu'une exploitation paie, elle doit s'étendre sur une superficie d'au moins 2,000 arpents. De plus, l'huile doit se mettre en " drums " neufs, ce qui entraîne des dépenses considérables.

Avant de songer à la création d'une industrie de Tung à Maurice, il faut s'assurer si le climat convient à la plante et s'il y a assez de terre

disponible ; il faut aussi faire la part des dégâts causés par les cyclones et estimer le coût probable de production.

Pour ce qui est du climat, l'hiver à Maurice est plus doux qu'au Nyasaland et en Birmanie, mais au dessus de mille pieds d'altitude le climat semble assez froid l'hiver pour provoquer l'état dormant chez la plante. Dans ces localités la pluviosité varie de cent à cent soixante quinze pouces, facteur trop élevé mais qui n'empêcherait pas quand même la culture du Tung.

Quant aux terres disponibles, les meilleures à l'altitude qui convient sont déjà plantées en cannes qui donnent un bénéfice plus fort que celui que l'on pourrait espérer tirer du Tung. Les autres terres de ces localités se prêtent mal à cette culture ou bien sont peu fertiles. telles celles du haut plateau entre Belle Rive et Midlands où l'on pourrait encore trouver cinq mille arpents, mais où la forte pluviosité entraînera une chute des rendements. A Chamarel on aurait bien mille ou deux mille arpents, mais pas plus car les sols de cette région assez accidentée ont été ruinés par l'érosion.

Il ne faut pas oublier les cyclones. Il serait nécessaire à Maurice d'établir des écrans d'arbres, d'autant plus que la saison des cyclones coïncide avec celle de la fructification du tung. De plus, les brise-vents eux-mêmes seront plus ou moins endommagés selon la violence des vents. En outre ces brise-vents occupent beaucoup de terrain. L'on doit tenir compte aussi du fait que le tung est une plante assez fragile, à racines superficielles, et souffrira beaucoup du passage de forts cyclones. C'est là un point capital, car une plantation de tung prend environ dix ans avant d'être en plein rapport, c'est-à-dire un laps de temps assez long pour subir le passage de cyclones violents ; l'on courrait donc le risque de perdre dix ans d'efforts et des dépenses au moment même où l'on s'attendrait à tirer profit de l'entreprise.

Même en admettant des dommages insignifiants et en supposant qu'à la suite d'une bonne culture les rendements soient satisfaisants, il est à craindre que les profits obtenus à Maurice soient inférieurs à ceux du Nyasaland grâce au coût relativement élevé de la main-d'œuvre. Maurice ne pourrait probablement pas concurrencer les producteurs plus favorisés d'autres pays et l'on doit conclure que les chances de succès d'une telle industrie ici seraient plutôt faibles.

Si cependant, les conditions arrivaient à changer et que des terres aujourd'hui cultivées en cannes devenaient disponibles, la culture du tung pourrait devenir rémunératrice.

En vue de cette expectative lointaine il serait peut-être bon d'établir quelques champs d'essai protégés par des brise-vents malgré le peu de succès que l'on puisse envisager d'une pareille entreprise.

# MAURITIUS HEMP PRODUCERS' SYNDICATE

## Communication de M. Lock O.B.E. sur l'Industrie de l'Aloës à Maurice

Les Membres du *Mauritius Hemp Producers Syndicate* se sont réunis en assemblée générale, le vendredi 24 octobre à midi dans la salle de réunion de la Chambre d'Agriculture sous la présidence de M. René Maingard de Ville-ès-Offrans.

Parmi les personnalités présentes, se trouvaient Son Excellence le Gouverneur intérimaire, plusieurs hauts officiels, des membres du bureau de la Chambre d'Agriculture, des courtiers, hommes d'affaires, administrateurs, directeurs de maisons de commerce etc.

En ouvrant la séance, M. Maingard remercie le gouverneur intérimaire d'avoir bien voulu honorer la réunion de sa présence et souhaite la bienvenue à tous ceux qui ont aimablement répondu à l'invitation du Syndicat.

M. Maingard présente ensuite à l'assistance M. Lock qui a été chargé par le ministère des Colonies d'aviser aux moyens de promouvoir l'industrie de la fibre à Maurice. M. Maingard dit que M. Lock a acquis une grande expérience de la question des fibres en Afrique Est où il occupe depuis de longues années une situation en vue.

M. Maingard fait ensuite un bref historique de l'industrie de la fibre à Maurice, et souligne en passant que le nombre des filateurs qui était de 41 aux environs de 1925 n'est plus que de 17 de nos jours. D'autre part, poursuit M. Maingard, la production de fibres qui se montait aux environs de 3.000 tonnes par an, il y a 20 ans, n'est plus que d'un millier de tonnes.

M. Maingard parle ensuite de l'impérieuse nécessité d'arriver à produire tous les sacs dont a besoin le pays pour l'emballage de ses sucres. Il sera, dit-il, de plus en plus difficile d'obtenir des sacs de l'Inde. Le gouvernement indien a décidé de réduire la culture du jute, et de mettre en culture de plantes vivrières une partie des terrains qui étaient jusqu'ici cultivés en jute. Par ailleurs, poursuit M. Maingard, le partage de l'Inde est venu créer des difficultés nouvelles, du fait que le jute est cultivé surtout dans le Pakistan, alors que la plupart des " jute mills " se trouvent dans l'Hindoustan.

Cette question de sacs a pris dans beaucoup de pays une tournure des plus alarmantes. M. Maingard dit avoir lu récemment qu'à Porto-Rico, on allait être forcé de charger le sucre en vrac à bord des navires. M. Maingard fait ressortir les pertes énormes que subirait le pays, si notre industrie sucrière se voyait forcée, par le manque de sacs, d'avoir recours au même procédé. Or, déclare M. Maingard, nous avons sous la main les

moyens d'éviter pareil désastre. Il suffirait que chacun fasse un petit effort dans le bien commun. Chaque propriété pourrait mettre sous aloës une partie de ses terres inférieures, et au bout de 3 ou 4 ans, le pays serait en mesure de produire sinon la totalité, mais au moins la plus grande partie des sacs dont a besoin l'industrie sucrière. Le gouvernement pourrait aider financièrement la réalisation d'un pareil plan, par un prêt sans intérêt qui serait remboursé par un prélèvement sur le prix de chaque tonne de fibres produite.

Du point de vue économique, la production locale des sacs aurait le gros avantage de garder dans le pays les sommes énormes qui sont envoyées tous les ans dans l'Inde pour l'acquisition des sacs.

M. Maingard parle ensuite de la question de grattes automatiques dont l'emploi réduirait considérablement le coût de production. Plusieurs types de ces grattes inventées par des Mauriciens travaillent actuellement. Elles ne sont pas parfaites, mais il va bientôt nous arriver un technicien qui après étude des types les plus intéressants décidera des modifications qu'il considérera utiles.

M. Maingard parle ensuite de la *Government Sack Factory* qui est aujourd'hui en mesure de rembourser au gouvernement impérial les sommes qui lui sont dues. La sacherie devrait devenir une usine coopérative dans laquelle seraient interressés tous les producteurs de fibres présents et futurs. Les fibres seraient payées comme actuellement et à la fin de chaque année, les profits réalisés par l'usine coopérative seraient partagés en deux : une partie servirait à constituer un fonds de réserve en vue de l'agrandissement de l'usine et du remplacement du matériel, tandis que l'autre serait répartie parmi les producteurs de fibres sous forme de boni.

Un plan à ce sujet a déjà été étudié. Ce plan pourra être mis à exécution aussitôt que le gouvernement sera en présence du rapport de M. Lock.

En ce qui concerne la variété d'aloës à être cultivée. M. Maingard se prononce nettement en faveur du Furcraea qui, dit-il, répond à nos besoins immédiats. La fibre de Furcraea est souple et se prête admirablement à la confection des sacs.

M. Maingard dit qu'il ne fait qu'émettre là une opinion personnelle et que ce sera à M. Lock de décider en dernier ressort.

M. Maingard passe ensuite la parole à M. Lock qui s'adresse à l'assemblée en ces termes :

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## *Address to the Mauritius Hemp Producers Syndicate 24th. October 1947.*

M. le Président, Messieurs.

First of all I would like to say how honoured I feel to have been

asked to visit Mauritius and to have the pleasure of meeting the fibre producers of this island.

Secondly, I would like to explain that I have come here as an adviser and not as an expert and I wish to state that it is my firm endeavour to advise you on your problems to the utmost of my ability. My sole desire is to help the Mauritius fibre industry as much as possible.

As for my qualification, I would like to be allowed to say a few words about myself, since I have gathered that some of you are, were somewhat uncertain about my past experience, and from whence I have come. I am a member of the Department of Agriculture in Tanganyika Territory, holding the rank of Senior Agricultural Officer. I have lived in East Africa for seventeen years, but for the past twelve years I have been in charge of sisal research work at the sisal Experimental Station at Ngomeni, near Tanga, a small port 100 miles south of Mombasa. In this capacity I have acted as adviser to the sisal industry of Tanganyika which I know very intimately indeed. I am also conversant with the sisal industry in Kenya where the crop is grown under conditions that are different to those in Tanganyika. As you are aware, the East African Sisal Industry is well organised and progressive.

We can now turn to the Mauritius Fibre Industry. During my short stay I have seen and learnt much, thanks to the kind reception which you have given me and to the assistance of Mr Craig, the Acting Director of Agriculture. In particular, I am deeply indebted to Mr A. North Coombes who has accompanied me on most of my journeys and who has given me the benefit of his vast local knowledge.

I have visited also the fibre districts and have walked over a considerable portion of the area; and what do I find ?

Well, I find that the methods of producing fibre are very little advanced, if at all, upon those used when the Raspador was first invented by a monk during the last century. Producing estates are dependent upon wild growth Furcraea and primitive methods of fibre extraction. Why was there been so small progress. I hasten to add that it is not entirely due to lack of trying to do better. What are the root causes which have led to this stagnation ?

The Mauritius hemp producer is beset by many natural and other difficulties which may be enumerated as follows :

(i) The nature of the plant; Furcraea grows slowly and has a low fibre percentage.

(ii) The limitations of the Raspador it does not allow of mass production methods.

(iii) The presence of stones and boulders — this debars rational cultivation of Furcraea.

(iv) Pressure from sugar-cane growing — sugar cane has monopolised all lands enjoying a good rainfall or those which can be irrigated.

(v) Bush and weed growth which are inimical to safisfactory growth of agavoid fibre plants.

(vi) Lack of water in some parts.

(vii) Lack of labour in other parts.

(viii) The relatively high costs of labour and of production.

How are there inherent difficulties, against which producers have battled so long to be overcome ? How is fibre to be produced more cheaply and more efficiently ?

These problems are indeed difficult to solve but I do not think that they are beyond solution.

We will begin with the plant. As I said it, Furcraea has found a natural habitat in Mauritius. It is attuned to your climate and soils. Its fibre is long, fine and soft. It is nearly a round fibre and its softness is due to its fineness as well as to having their walled fibriles or cells which go to build up each individual fibre. Intrinsically, Mauritius Hemp is one of the best in the hard-fibre class, comparable to, if not better than, Cantala.

The disadvantages of Furcraea are :

(i) Owing to its slow growth the annual production of leaves is low.

(ii) The fibre is difficult to extract cleanly due to its fineness and relative lack of strength.

Here I might mention that if the leaves were not fleshy then it would prove exceedingly difficult to extract the fibre at all. Slow growth results in low yields per arpent, while the lack of a good decorticator has prevented the adoption of mass production methods.

Now it has been suggested that the industry should give up Furcraea and start growing agave fibre plants such as Sisal or *Agave amaniensis* (blue sisal).

The advantages of the agaves are that they give higher yields per arpent, higher fibre percentages and the leaves may be mass-decorticated easily.

The agaves are drought-resistant plants and are very adaptable, but that does not necessarily mean that they do best under dry conditions or on poor soils. Except possibly in the wetter parts on the windward side of the island, my observations lead me to think that sisal and *A. amaniensis* are not entirely happy in Mauritius.

In the fibre belt, conditions are too dry largely because the rather low rainfall is poorly distributed and also because of the poor moisture holding powers of the soil. It is noticeable that most sisal plants are not firmly rooted. A cool climate, almost sub-tropical, too.

Consequently I have come to the conclusion that Mauritius should continue to depend upon Furcraea, or upon the aloe, as it is called locally. The points in its favour are :

(i) It grows naturally in Mauritius.

(ii) The leaves are easy to cut by woman labour ; a very important matter since in East Africa it is mainly the lack of men cutters which restrict estate outputs.

(iii) The fibre makes up into excellent bags ; a modern sack factory is in existence and there is a large market for bags at your doorstep.

The question of decortication is being studied by a consulting engineer.

Next we have to consider the best way of producing aloe fibre. I have already mentioned the small progress made in the methods of fibre production in Mauritius.

This is very striking compared with other hardfibre producing countries where exports have continued to rise, year by year, independently of prices or markets. Now many of these countries began by exploiting wild growths ; Mexico is the oldest example ; Sansiviera, and to some extent, Sisal, in East Africa is another. It is not without significance that all these countries discarded such practices long ago, because they were uneconomical, and went over to plantation methods.

I am aware that you have been counselled before now to grow Furcraea on more intensive lines and I know that a number of attempts have been made to plant Furcraea, sometimes with not altogether convincing results.

So far Furcraea has not been the subject of a great deal of research and there is still much to learn about it. However, it happens to be closely related to sisal and is very similar to sisal morphologically, and I think that we might safely apply some of the lessons learnt with sisal in Tanganyika to the cultivation of Furcraea in Mauritius.

With short-stemmed plants like the agaves, the first essential is to plant on a well prepared land ; they must have a clean start. It is exceedingly difficult to secure this in Mauritius, especially on the immature soils of the fibre belt, owing to literally masses of stones and boulders.

I am convinced that no progress at all can be made with the cultivation of Furcraea unless these stones are removed from the surface of the soil. They have got to be moved. Bulldozers are specially designed for this kind of work. Once removed this constitutes a permanent improvement and I see no reason why this operation need be any more expensive than is cleaning heavy forest in Tanganyika for sisal growing. Once soil is exposed cultivation methods can be introduced, small bush stumps eradicated, weeds controlled and the Furcraea planted. " Herbe condé " is regarded as the most pestilential weed in the island and many regard it as the chief limiting factor to the cultivation of Furcraea. I am in accord with these views but I also consider that any form of bush competition is bad for agaves.

Therefore, there should be no " acacia " (*Leuceana glauca*) or " filao " (*Casuarina*) in the fields. It has been agreed that Furcraea likes shade and

that the bush helps to stifle " herbe condé " but I would suspect that much of the low fibre percentage complained of and the weakness of the fibre is attributable to shade effects. Patches of Furcraea growing in sunlight appear no worse than those under dense shade, and some producers have stated that the fibre percentage is higher. The presence of bush, moreover, renders plantation control absolutely impossible.

Furcraea by itself exerts very little shading effects ; this implies that weeds must be controlled by hand until the Furcraea is well established. During the first year it may be necessary to weed once a month. I have already referred to the low rainfall and its unsatisfactory distribution in the fibre belt. Most of the soils there are intrinsically fertile and fertilizers should be unnecessary. I have seen no signs of deficiency diseases but the chief limitation to growth is lack of soil moisture. Weeding helps to conserve soil moisture and is essential if rapid and sustained growth is desired.

The important question of spacing comes next for consideration. It appears to me that a common mistake in the past has been to plant Furcraea too sparsely. In the wild it will grow cheek by jowl in dense masses.

I would accordingly advocate planting Furcraea closely in double-rows for the following reasons :

(i) To give as high a population of plants per acre as possible.

(ii) To attain the densest effects as early as possible.

(iii) Closely planted, the plants would lend each other greater support act as winbreaks and thus lessen cyclone damage. The rows should preferably run at right angles to the prevailing winds.

(iv) To provide access for weeding, cutting and piling stones. A spacing of 13 feet plus 3 feet by 2½ feet is a tentative example : this gives a plant population of 2,178 per acre. Actually the best interval between the pairs of rows would be a big factor.

Supposing the distance proved to be unduly wide, the intercropping with " filaos " might be admissible.

In the case of sisal it has been proved that early commencement of cutting not only leads to high fibre yields but in addition to improved fibre percentages.

The better fibre percentage is brought about by a reduction of the weight of the leaf (not its length) and this reduction takes place in the fleshy butt end of the leaf. I would therefore venture to suggest that Furcraea should be cut early in its life. The first or second cuttings may not yield any leaf of economic value and the operation would be purely cultural. Besides checking the metabolism of the plant, they facilitate weed control.

Once the Furcraea is well established and in bearing, upkeep could consist of cutlassing after the rains during April or May. Bush and weed growth would arise in the heap of stones thereby aggravating the amount of weeding necessary through seeding.

In this case I would suggest control either by cutlassing the weeds

before flowering or the use of flame throwers which would do no harm on the stones.

One further point about Furcraea. It has been stated that possibly superior seedling form of Furcraea may exist on the island. My observations lead me to believe that Furcraea, like sisal in Tanganyika, very rarely sets seeds.

I consider that you only have two clones or types, one being *Furcraea gigantea* and the other " malgache " or *Furcraea Valentiana*.

Well, Messieurs, these are some of my ideas as to how Furcraea should be cultivated in Mauritius. Is it possible to apply then on a practical scale ?

When I arrived in Mauritius I had in mind the possibility of establishing large plantations having strategically sited central factories, on similar lines to your sugar estates. Large scale concerns usually result in economic working since a high fibre output means a bigger spread for overhead charges besides justifying the installation of modern and costly machinery. But the hemp industry is not yet in a position to develop on these lines and may not be able to do so for a number of years to come. Generally speaking there is not enough land available in compact blocks and what spare land there is happens to have been parcelled out, since a long time ago, into a number of relatively small estates, and these are often fragmentated by sugar cane fields. Furtheremore, a mechanically fed, large capacity decorticator, suitable for Furcraea leaves, has yet to be designed and tested.

I have thus formed the conclusion that the industry must develop on the basis of small units. Twelve such units each producing 100 tons of fibre annually would keep the sack factory working at full capacity and provide a quarter of the bags needed by the sugar industry. Twenty four such units would obviously go further towards making Mauritius self-supporting in sugar-bags. But twenty four factories turning out between 200-300 tons of fibre each would provide all the fibre necessary for bagging a sugar crop of 300,000 tons. This goal should not be beyond the reach of the Mauritius hemp industry.

For the present I would fix a maximum of 100 tons output per factory per year until better means of decorticating the leaf become available. If Furcraea were grown intensively each estate need not cultivate much more than 200 acres.

There is no obligation to plant this area in a single block ; it could be divided into sub-blocks of say 50 acres each. This would enable the grower to select his land and only use those parts having good soil and

fewest stones, providing that they were not too far removed. A good road and a lorry would serve for transport. Planting could be carried out progressively according to a programme. Growing agaves is a long-term business and it is always important to plan ahead. In the event of a good decorticator being designed, then the planting programme could be multiplied to suit the capacity of the decorticator.

In its present from Mauritius hemp is not suitable for export and in normal times it would be difficult to compete with other hard fibres. However, there is a ray of hope that, supposing the fibre could be isolated from the leaf in a clean, straight and untangled condition, it should be readily taken up overseas for spinning high-class twines and cordages.

# FACTORY NOTES ON THE CLARIFICATION OF CANE JUICE AND ITS INLUENCE ON FACTORY YIELD.

E. HADDON

The earliest method of purification of the juice was to heat it in iron vessel over a wood fire, wood ashes were added to the hot juice to neutralize its acidity, scums rose to the surface and were removed by skimming.

Of all the alkalis employed, *Lime* is the best and is still used when white crystals are required the bleaching of the juice is obtained by adding sulphorous acid gas either before or after liming. The object of the chemical treatment is to facilitate the crystallization of sucrose.

Ordinary clarification by means of lime and heat does not always increase the purity of the syrup from which sugar is obtained it also gives final molasses of about 40 degrees purity. Hot liming prior to the addition of sulphurous acid gives an increase of purity of about 1°37 and lowers the glucose ratio by about 0.5.

Carbonatation gives a better increase of purity but a much greater destruction of reducing sugars, the glucose ratio drops to 1.24 and the purity of the final molasses is increased through some of the sucrose of the syrup replacing part of the destroyed reducing sugars. Carbonatation turns out fine white crystal similar to the best refined sugar.

The following are the results obtained by Mauritius and Natal factories in 1946.

MAURITIUS ORDINARY CLARIFICATION

| No. of Factories | Efficiency Factor or Ratio | Purity of Mixed Juice | Difference between Purity Mixed & Purity Syrup | Clerget Purity of Molasses |
|---|---|---|---|---|
| 1 | 103.68 | 87.5 | — 0.8 | 37.3 |
| 2 | 102.70 | 83.4 | — 0.1 | 37.9 |
| 3 | 102.85 | 84.8 | + 0.3 | 41.8 |
| 4 | 101.58 | 87.1 | — 0.7 | 37.0 |
| 5 | 100.90 | 84.3 | + 0.5 | 39.4 |
| 6 | 100.60 | 85.6 | 0.0 | 36.0 |
| 7 | 100.35 | 85.1 | — 1.4 | 36.2 |
| 8 | 100.26 | 84.4 | + 0.5 | 40.0 |
| 9 | 100.24 | 87.4 | + 0.6 | 36.0 |

MAURITIUS ORDINARY CLARIFICATION — *Continued.*

| No. of Factories | Efficiency Factor or Ratio | Purity of Mixed Juice | Difference between Purity Mixed & Purity Syrup | Clerget Purity of Molasses |
|---|---|---|---|---|
| 10 | 100.08 | 83.7 | — 0.7 | 38.6 |
| 11 | 100.00 | 84.7 | — 0.6 | 37.2 |
| 12 | 100.00 | 83.3 | + 1.3 | 43.7 |
| 13 | 99.82 | 86.1 | + 0.6 | 34.7 |
| 14 | 99.49 | 85.2 | + 0.8 | 38.6 |
| 15 | 99.47 | 84.6 | + 0.1 | 39.1 |
| 16 | 99.25 | 84.0 | + 1.1 | 40.4 |
| 17 | 98.98 | 85.9 | + 1.1 | 41.9 |
| 18 | 98.80 | 86.4 | + 0.7 | 40.1 |
| 19 | 98.76 | 85.9 | + 0.3 | 36.9 |
| 20 | 98.72 | 84.2 | — 0.1 | 44.7 |
| 21 | 98.64 | 85.8 | 0.0 | 39.0 |
| 22 | 98.51 | 85.9 | + 0.2 | 38.5 |
| 23 | 98.36 | 85.2 | + 0.2 | 39.0 |
| 24 | 98.15 | 85.9 | + 0.5 | 38.5 |
| 25 | 98.01 | 85.7 | — 0.1 | 39.2 |
| 26 | 97.89 | 87.3 | + 0.9 | 39.9 |
| 27 | 97.83 | 84.0 | — 0.3 | 37.6 |
| 28 | 96.86 | 86.4 | — 0.6 | 38 8 |
| 29 | 96.72 | 86.7 | — 0.7 | 40,2 |
| 30 | 96.66 | 84.6 | + 0.8 | 40.2 |
| 31 | 96.44 | 84.3 | + 0.2 | 40.1 |
| 32 | 95.57 | 83.4 | + 0.1 | 40.7 |
| 33 | 95.08 | 85.7 | — 1.0 | 38.9 |
| Average | 99.08 | 85.2 | + 0.3 | 39.2 |

NATAL FACTORIES

| | | | | |
|---|---|---|---|---|
| 1 | Carbonatation 101.79 | 85 81 | + 5.29 | 44.31 |
| 2 to 18 | Hot Liming 99.44 | 85.86 | + 1.37 | 41 60 |
| Average | 99.56 | 85 86 | + 1.31 | 41.75 |

The theoretical yield given by the S. J. M. formula assumes that the fall in purity from S of the juice to M of the final molasses is *only due to* the removal of crystals with *no change in the other constituents of the juice.* In practice however changes do take place by the different clarification and boiling methods, so that to know what may be expected from canes of a certain purity — the theoretical yield given by the factory's efficiency factor which is fairly constant from season to season.

The efficiency factor is the ratio between factory and theoretical yields if the purity of the clarified juice (syrup) is either higher or lower than that of the mixed juice, the yields will increase or decrease but the *ratio or efficiency factor* of the factory will remain practically the same.

*Influence of the efficiency factor on factory yield.*

| | |
|---|---|
| Sucrose in mixed juice o/o cane ... ... ... | 12.87 |
| Purity of „ „ ... ... ... ... | 85.2 |
| Purity of sugar ... ... ... ... ... | 99.0 |
| Purity of molasses ... ... ... ... | 40.0 |
| Sucrose extracted by factory ... ... ... ... | 11.35 |

Available sucrose by S. J. M. formule $12.87 \frac{99\ (85.2-40)}{85.2\ (99-40)} = 11.455$

Efficiency factor or ratio $\frac{11.35}{11.455}$ .9908

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Factory | No. 7 | with a purity of | 85.1 | shows an efficiency factor of | | | | | 100.35 |
| „ | No. 14 | „ | „ | „ | 85.2 | „ | „ | „ | „ 99.49 |
| „ | No. 23 | „ | „ | „ | 85.2 | „ | „ | „ | „ 98.36 |

The above show that every factory has its *own efficiency factor or ratio.*

By proper clarification, the purity of a juice of 85 purity could be raised by 2½ degrees, the following results would then be obtained.

| | |
|---|---|
| Sucrose in juice ... | 12.87 |
| Purity of mixed juice ... | 85.2 |
| „ „ clarified juice ... | 87.7 |
| Available sucrose ... | $12.87 \times \frac{99\ (87.7-40)}{87.7\ (99-40)} = 11.737$ |

Factory yield with ratio of .9908 = 11.737 × .9908 = 11.629
Increased yield of 11.629 — 11.35 = 0.279

On a weekly manipulation of 6000 Tons it would mean 16.7 Tons of extra sucrose corresponding to 16.9 Tons of sugar of 98.5 Pol. According to recent experiments, the purity could easily be increased by 2½ degrees from 85 purity by adding the necessary amount of Aluminium Sulphate to the mixed juice before *liming and heating*. Aluminium Sulphate is manufactured by The African explosives & Chemicals Ld. *Natal*. The above Chemical has now taken the place of Alumina Ferric which was and is still used in S. Africa for the purification of Muddy water for domestic use.

(S. A. Sugar journal August 1947 page 495).

# SOCIÉTÉ DES CHIMISTES ET DES TECHNICIENS DES INDUSTRIES AGRICOLES DE MAURICE

*Conférence sucrière tenue le 29 et le 30 mai 1946.*

## Communication de Monsieur MAURICE NORTH COOMBES.

Monsieur le Président,

Messieurs,

Les appareils à cuire sur nos propriétés sont très disparates et beaucoup ont plus de défauts que de qualités.

Comme c'est une des stations les plus importantes de la fabrication du sucre, il est impérieux de s'en occuper particulièrement.

Nous savons tous les ennuis que nous causent aux turbines les grains irréguliers, les conglomérats et les faux grains.

Bien qu'il coulera encore beaucoup d'eau sous les ponts avant d'arriver à faire des massescuites exemptes de faux grains, il n'est pas moins vrai que l'on peut arriver à diminuer de beaucoup leur quantité.

Le cuitomètre est devenu aujourd'hui un accessoire indispensable à l'appareil à cuire tout comme le microscope.

Le premier remplace avantageusement la sonde et les doigts du bouilleur. Il nous sera d'une aide appréciable en nous indiquant tous les défauts de nos appareils à cuire aussitôt que nous commencerons à l'employer.

Le second est non moins important ; il est d'ailleurs très employé dans nos usines et nous a donné de multiples indications nous permettant d'apporter des améliorations dans le processus de cuisson de nos massescuites.

Entre autres choses le microscope nous a fait voir que :

1o. Les grains irréguliers et les conglomérats proviennent d'une cuite simple à pureté élevée.

2o. Les grains irréguliers proviennent d'une cuite où l'on laisse les grains " sortir d'eux mêmes " par une concentration excessive, et aussi par une mauvaise circulation de la masse.

Les faux grains sont favorisés par :

1o. Un jus trouble et un mauvais tamisage aux défécateurs,

2o. Un égout non ou mal barboté.

3o. Trop peu de grains formés à la cuite simple.

4o. Une trop grande tête hydrostatique causant une température trop élevée dans la partie basse de l'appareil.

5o. Une concentration trop élevée après le grainage et pendant la cuite.

6o. Les fuites laissant l'air pénétrer dans la massecuite, surtout par les soupapes de vidanges.

7o. Les irrégularités pendant la cuisson.

L'appareil à cuire lui même devrait être de la même capacité que le malaxeur, et gradué en hectolitres aussi bien qu'en pourcentage de sa capacité.

Il serait très important d'avoir un journal pour chaque appareil à cuire. Ce journal serait divisé en autant de parties que le nombre de massescuites du procédé adopté et les observations suivantes seraient inscrites pour chaque cuite (ces observations étant prises toujours à la même hauteur pour être comparables) :

Appareil à cuire No.....Massecuite.....Date.....
Pureté désirée de la massecuite
Pureté de la cuite simple
Purete de l'égout
% pied de cuite prise au vide
Hauteur de la massecuite au moment de l'observation
Pouces de vide
Température
Lecture du cuitomètre

Observations au microscope (de la charge de claire ou d'égout et de la massecuite même.)

***Remarques.***

L'appareil à cuire doit être muni de tous ses accessoires : Sonde, burettes, thermomètre, indicateur de vide, un tube en laiton 1/4" diam. int : placé au bas de l'appareil pour l'injection de la poudre de sucre, d'un tuyautage d'un pouce de diamètre pour l'eau de circulation (Ce tuyau prendra d'un bac d'eau chaude et communiquera au tuyau central de charge de l'appareil).

Aussitôt après avoir mis l appareil en service, on doit s'assurer s'il ne prend pas d'air, les seules places où cela serait possible devront être examinees (soupapes de décharge, différents robinets) et les fuites seront aussitot réparées.

On doit aussi s'assurer que tout ce qu'on doit apporter à l'appareil à cuire soit de bonne qualité. Les échantillons de la claire et des égouts doivent être examinés au microscope, et s'il y a des améliorations à apporter au tamisage du jus déféqué ou au barbotage des égouts, on devra le faire sans tarder.

Comme les conglomérats ne sont jamais formés dans un magma de basse pureté il faut charger l'appareil à cuire d'un mélange de claire

et d'égout, la pureté du mélange devant être entre 65° et 70°. Et afin d'avoir des grains réguliers il faut abandonner le vieux système de laisser les grains sortir d'eux mêmes et faire le " shock seeding ".

Pour avoir le nombre voulu de grains, il s'agit de grainer tout au bas dans l'appareil à cuire.

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En 1941 et 1942 notre collègue O.d'Hotman, alors à Beau Séjour, nous a montré la méthode d'Alewijn avec l'aide d'un cuitomètre, et a apporté aux appareils à cuire de grosses améliorations.

Je dois ici l'en remercier personnellement.

Mais à partir de 1943, n'ayant plus de cuitomètre, j'ai constaté que le grainage se faisait par " shock " à l'introduction de la poudre de sucre ; une plus grande ou plus faible quantité de poudre nous donnait le même résultat. Et je dois ajouter que sans cuitomètre il est impossible d'appliquer correctement la méthode d'Alewijn. Tout en conservant la même technique, nous avons depuis grainé par " shock seeding " avec d'assez bons résultats.

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On charge son appareil à cuire et on évapore le sirop le plus vite possible pour ne pas perdre de temps. Pendant cette opération, la valve de l'eau de circulation doit être laissée ouverte jusqu'à ce que son tuyau soit très chaud ; ceci afin qu'au moment voulu il n'y ait pas admission d'eau froide dans l'appareil.

Après concentration du sirop à la hauteur voulue, des échantillons sont pris avec la sonde et le filet mesuré. Aussitôt que celui-ci sera d'un pouce, il sera nécessaire comme le préconise Alewijn d'augmenter la température en réduisant le vide d'un pouce ou d'un pouce et demi.

En faisant cela, la concentration du sirop va baisser immédiatement et s'il s'y trouvait des grains, ceux-ci disparaîtraient complètement — En même temps la pression de vapeur dans la calandre augmentera et il sera nécessaire de la réduire à environ 3 lbs.

Qu'on laisse évaporer sous ces mêmes conditions, jusqu'à ce que le filet d'un pouce soit de nouveau atteint ; à ce moment on doit ensemencer le sirop avec de la poudre de sucre qui aurait traversé un tamis de 48 × 48.

On emploiera *un* gramme de cette poudre de sucre pour *trois* tonnes de sucre emballé.

Cette poudre doit être bien sèche et doit être contenue dans un flacon à large col.

Le tube en laiton servant à l'ensemencement doit être ouvert à l'atmosphère quelques secondes avant l'introduction de la poudre afin

qu'il soit complètement sec (pour ne pas laisser la poudre adhérer aux parois du tube).

Il serait même préférable de se servir pour l'ensemencement d'une suspension de la poudre de sucre dans un liquide convenable. La crainte que la poudre de sucre soit entraînée dans une poche d'air serait ainsi éliminée.

Le "shock" produit par l'ensemencement fera sortir d'autres grains dont le nombre dépendra du volume de sirop et de sa pureté.

Si on prend l'habitude de toujours grainer à une pureté déterminée, on obtiendra plus ou moins de grains d'après le volume de sirop concentré.

Deux minutes après avoir ensemencé le sirop on pourra très bien distinguer les grains au microscope (grossissant 70 fois) tandis qu'à l'œil nu, on ne pourra voir les grains qu'après 7 à 8 minutes. (Il est très important de se servir du même grossissement au microscope pour se rendre bien compte de la quantité de grains.)

Aussitôt les grains vus au microscope on allouera une ou plusieurs minutes supplémentaires pour la formation d'autres grains afin d'avoir la quantité voulue. (Ce n'est que par expérience qu'on arrivera à ce point). Ensuite, on admet l'eau de circulation pour abaisser la concentration et arrêter la formation de grains.

Pour rallier ces grains il est indispensable de cuire très lentement, la clairce sera admise continuellement. Le vide lui-même ou mieux encore le cuitomètre indiquera le réglage de la quantité de clairce ainsi que celle de l'eau de circulation.

Il ne faudrait pas, cependant, laisser la concentration dépasser le point de grainage, ni permettre à la masse de devenir trop fluide, ceci arrive souvent quand les bouilleurs alimentent l'appareil par saccades : (mauvaise méthode dont le résultat inévitable est la formation de faux grains).

Pendant que se fait le ralliement on augmentera le vide très lentement, le plus lentement possible jusqu'à ce qu'on ait atteint le vide maximum, où on continuera à évaporer le plus possible après avoir fermé l'eau de circulation.

Si on a un appareil à cuire trop haut on ne devrait pas essayer de trop le remplir car une grande tête hydrostatique ferait que la température à la base de cet appareil serait trop élevée, la circulation de la masse serait défectueuse et il y aurait caramélisation.

Toutes ces indications et d'autres encore seraient bien vite obtenues si on attachait un journal à chaque appareil à cuire et si l'on faisait de fréquentes observations au microscope.

# SOCIÉTÉ DES CHIMISTES ET DES TECHNICIENS DES INDUSTRIES AGRICOLES DE MAURICE

## *Compte rendu des séances*

### Réunion générale du Vendredi 9 Mai 1947.

*Conférence du Dr. H. Evans sur les Herbicides* *.

Cette réunion eut lieu à l'Institut, à 14 heures, sous la présidence de M. P. Halais, président.

Autres membres présents: MM. Serge Staub, André Martin, Oscar Davidsen, Dr. A. d'Arifat, Jean Galea, Jean Brouard, Cyril Mayer, Louis Baissac, Maurice Rey, C. Gibson, Octave Wiehe, Adrien Wiehe, Edgar Jullienne, Frank L. Smith, Francis North Coombes, Alfred North Coombes, Georges Park, R. Desvaux de Marigny, Antoine Vinson, et H. Kœnig.

Le Président ouvre la séance et passe la parole au conférencier qui, bien connu pour ses travaux n'a pas besoin d'être présenté. Le Dr. Evans remercie et, parlant pendant environ 50 minutes, traite complètement la question des " Chemical Weed Killers ".

Le Président remercie le Dr. Evans de son intéressante causerie et demande aux membres présents qui voudraient poser des questions de le faire.

Le Capitaine Coombes demande au conférencier le résultat de ses expériences sur le sappan. M. G. Park prie le Dr Evans de bien vouloir repéter certaines proportions de mélanges donnés au cours de la causerie.

M. A. Vinson demande s'il n'y aurait pas moyen d'obtenir par le Département d'Agriculture les herbicides d'Amérique. M. Francis N. Coombes voudrait connaître les risques d'endommager les cannes en employant du chlorate de soude. Le Dr. Evans dit qu'audessus de 2 o/o il y aurait danger au cas où la solution serait déposée sur les feuilles de la canne.

A une question du Capitaine Coombes quant au résultat de l'application du chlorate de soude contre l'herbe condé, le conférencier répond que le Condé est détruit mais que les racines ne sont pas affectées, et que le mieux serait de faire l'application de l'herbicide sur les repousses des chicots de condé.

Le Président remercie le conférencier et les membres présents et lève la séance à 15.20 heures.

* Voir " La Revue Agricole ", Vol. XXVI, Mai-Juin 1947, p. 108.

## Réunion générale du Vendredi 13 Juin 1947.

*Conférence de Mr. P. O. Wiehe sur " la mortalité des boutures de cannes à la plantation *.*

Cette réunion eut lieu à l'Institut à 14 heures sous la présidence de M. P. Halais, président.

Etaient présents : MM. A. Martin, A. North Coombes, O. d'Hotman de Villiers, R. Pilot, Ph. Daruty de Grandpré, G. Ducray, M. de Robillard, A. Wiehe, O. Davidsen, A. Mayer etc.

Le Président ouvre la séance et passe la parole au conférencier.

M. P. O. Wiehe développe son sujet et donne certains résultats de la valeur comparative des différents fongicides utilisés pour la préservation des boutures de cannes. Il montre plusieurs échantillons de cannes atteintes de maladies cryptogamiques qui permettent à l'auditoire d'apprécier le développement de ces maladies à leurs différents stages. Après la conférence, M. P. O. Wiehe répond à plusieurs questions des membres et donne des précisions sur les méthodes de préparation des boutures avant la plantation.

Le Président remercie le conférencier et l'assistance et lève la séance à 15.10 hres.

## Réunion générale du Mercredi 18 Juin 1947.

Cette réunion eut lieu à la Station Expérimentale de Barkly, à 14 heures, sous la présidence de M. P. Halais, président.

Etaient présents : MM. A. Martin, S. Staub, A. N. Coombes, O. d'Hotman de Villiers, R. Leclézio (jr.), R. Ménagé, M. de Robillard, R. Desvaux de Marigny, E. Rouillard, G. Bauristhène, C. Courtois, Ph. Daruty de Grandpré, A. Baissac, E. Davy, etc.

M. A. N. Coombes, aidé de ses assistants, conduisit ses visiteurs dans les jardins et donna des explications sur les différentes lignes suivies pour le développement de la production des graines potagères et des jeunes plants et boutures. L'attention des visiteurs fut attirée principalement par un champ de choux-fleurs de pousse parfaitement régulière, provenant de graines produites à la Station ; on put voir aussi des " solar propagators " construits par les employés de la Station sous les directives de M.

* Voir " La Revue Agricole ", Vol. XXVI, Mai-Juin 1947, p. 138.

A. N. Coombes, et la préparation d'un insecticide avec des racines de Derris.

M. Julien, assistant de M. A. Coombes, donna ensuite des explications détaillées sur le mode d'application des différents insecticides employés pour la protection des semis et jeunes plants.

Les visiteurs se réunirent ensuite à un thé offert par la Société des Chimistes et des T. I. A. de Maurice. Le Président remercie M. A. N. Coombes et ses assistants de leur aimable accueil, et leva la séance à 15 heures 45.

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## Réunion générale du Vendredi 4 Juillet 1947.

*Conférence de M. O. d'Hotman de Villiers sur " des résultats d'études relatives à la régénération des sols épuisés de nos régions humides par incorporation de poussières basaltiques *.*

Cette réunion eut lieu à l'Institut à 14 heures, sous la présidence de M. P. Halais, président.

Etaient aussi présents: MM. J. Doger de Spéville, A. Martin, S. Staub, A. N. Coombes, G. Park, R. Desvaux de Marigny, M. de Robillard, A. Bérenger, R. Pilot, J. Le Blanc, C. Renaud, A Noël, A. Harel, F. N. Coombes, R. de Spéville, P. d'Arifat, F. Robert, L. Bourgault du Coudray, H. Fenouillot de Falbaire, S. Feilafé, R. Autard, L. Pilot, F. Tennant, M. Régnaud, L. Régnaud, M. Rey, F. Giraud, R. Pilot, P. G. Anthony, R. Maigrot, A. de Sornay, R. Lincoln, C. Mayer, A. Wiehe, Ph. Daruty de Grandpré, A. Baissac, C. O'Connor, L. Fayd'herbe, L. N. Coombes, Rev. Père Keenan, Dr. R. E. Vaughan, J. Duhamel, Dr. André d'Arifat, Dr. R. Pierre, G. Mazery, S. Antelme, etc. et plusieurs étudiants du Collège d'Agriculture.

S'étaient excusés: MM. L. Baissac, A. Leclézio, V. Olivier, P. O. Wiehe, S. Dupont de Rivaltz St. Antoine.

Le Président ouvre la séance et passe la parole au conférencier.

M. O. d'Hotman fait un exposé complet de ses expériences sur l'application de poussières basaltiques aux latérites épuisées de nos régions humides et prouve les résultats positifs obtenus par son procédé.

* Voir " La Revue Agricole ", Vol. XXVI, Juillet-Août 1947, p. 160.

Le Président remercie le conférencier de son brillant exposé et soulève la question de l'économie du procédé. Se basant sur les résultats obtenus par M. O. d'Hotman, le Président émet l'opinion qu'un résidu végétal (par exemple têtes et feuilles vertes de cannes provenant de terres plus fertiles) répandu abondamment sur les entrelignes de cannes produirait des augmentations bien plus spectaculaires de rendements. M. O. d'Hotman répond que selon lui les poussières basaltiques donneraient de meilleurs résultats, évidemment sans diminution des engrais normalement appliqués. M. R. Lincoln parle de la possibilité d'apport d'éléments rares contenus dans la roche et pense que les résultats obtenus par M. O. d'Hotman pourraient être dus à ces éléments.

Plusieurs membres prennent part à une discussion sur l'opportunité de l'analyse des basaltes au point de vue de leur valeur en matières fertilisantes. M. P. Halais fait ressortir que l'analyse des basaltes ne donnerait des résultats que sur la composition de la roche, mais ne serait d'aucune valeur quant à l'assimilation de ces matières par la canne.

Le Président remercie l'assistance. La séance est levée à 15.10 heures.

## NOTICE

### EXAMINATIONS IN SUGAR MANUFACTURE

OF THE

### CITY AND GUILDS OF LONDON INSTITUTE, 1948

Intermediate and Final Examinations in Sugar Manufacture of the City and Guilds of the London Institute will take place at the Mauritius Agricultural College on Tuesday 27th April, 1948.

Intending candidates should send in their application to the Director of Agriculture not later than 31st December 1947 and must forward the fee for the examination which has been fixed at Rs. 8 for the Intermediate and Rs. 13 for the Final Examination.

The syllabus of these examinations may be obtained on application to the Director of Agriculture.

Mauritius Agricultural College,
Réduit,
1st December 1947.

N. CRAIG,
Ag. Director of Agriculture.

# STATISTIQUES

## 1°. CLIMATOLOGIE

### (a) Pluviométrie (Pouces)

| Localités / Mois | Nord | | | | | | | Centre | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Grand' Baie | Pamplemousses† | Pamplemousses (Normale) | Abercrombie | Abercrombie (Normale) | Ruisseau Rose | Belle Vue Maurel | Beau Bois (Moka) | Helvétia | Réduit | Réduit (Normale) | Curepipe* | Curepipe (Normale) |
| Sept. 1947 | — | 1.16 | 1.83 | 0.74 | 1.65 | 0.33 | — | 3.92 | 3.39 | 1.62 | 1.71 | 5.69 | 5.78 |
| Oct. „ | — | 0.83 | 1.95 | 0.35 | 1.11 | 0.14 | — | 2.23 | 2.15 | 0.83 | 1.91 | 4.07 | 4.52 |

| Localités / Mois | Est | | | | Ouest | | | | | Sud | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Centre de Flacq | Camp de Masque | Palmar | G.R.S.E. | Port-Louis | Case Noyale | Beau-Bassin | Beau-Bassin (Normale) | Richelieu | Rose Belle | Riche-en-Eau | Camp Diable | Chemin Grenier |
| Sept. 1947 | 3.68 | 4.22 | 1.49 | 2.17 | 0.65 | 0.06 | 0.60 | 0.85 | 0.44 | 4.54 | — | 2.24 | 2.60 |
| Oct. „ | 2.03 | 2.54 | 0.92 | 0.97 | 0.13 | 0.00 | 0.25 | 0.85 | 0.07 | 3.69 | — | 1.33 | 1.94 |

### (b) Température °C

| Localités | Beau-Bassin | | Réduit | | | | Curepipe* | | Richelieu | |
|---|---|---|---|---|---|---|---|---|---|---|
| Mois | Max. | Min. | Max. | Min. | Moy. | Nor. | Max. | Min. | Max. | Min.‡ |
| Sept. 1947 | 24.6 | 15.5 | 22.6 | 15.3 | 18.4 | 18.7 | 20.2 | 14.5 | 25.4 | 18.6 |
| Oct. „ | 24.8 | 17.3 | 24.0 | 16.3 | 19.7 | 19.9 | 21.2 | 15.4 | 26.9 | 20.6 |

### (c) Insolation

| Réduit | | |
|---|---|---|
| Mois | Heures de Soleil | Fraction d'insolation |
| Sept. 1947 | 231.3 | 64.6 |
| Oct. „ | 234.8 | 60.5 |

*Collège Royal. † Jardin Botanique. ‡ Moyennes mensuelles.

## 2° Preliminary Compilation of the 1947 Sugar Crop.

Weather conditions in October and November were very favourable to cane maturation and milling operations. The extraction of sugar per cent cane has surpassed all expectations : the average figure for the whole Island being 12.5 o/o, as compared with the previous maximum of 12.11 o/o in 1943.

The anticipated tonnage of cane approximates to 2,793,600 metric tons, as against 2,750, metric tons forecast in September last.

The total expected sugar production works out to 350.000 metric tons. and is the highest on record ; the next best was 330.880 metric tons (factories' figures) in 1942. A considerable portion of the difference between the estimated and actual crop can be accounted for by the very high extraction which is well above the preliminary figure of 12.0 o/o.

This year's record sugar production can be attributed to the following factors :

(1) exceptionally favourable maturation conditions ;

(2) the high proportion of virgin, first and second ratoons canes ;

(3) the high percentage of M. 134/32 under cultivation ;

(4) the exceptionally good growth conditions having prevailed in November, 1946 ;

(5) the favourable growth conditions experienced in June and July 1947 particularly in the northern districts.

The distribution according to districts and the production of the last five years (factories' figures) are as follows :

(Unit : One thousand metric tons)

| Districts | 1947 Preliminary Compilation | 1946 | 1945 | 1944 | 1943 | 1942 |
|---|---|---|---|---|---|---|
| Pamplemousses and Riv. du Rempart | 87.1 | 86.70 | 41.71 | 57.60 | 77.64 | 73.60 |
| Flacq ... ... | 51.0 | 41.29 | 21.05 | 29.98 | 45.74 | 51.53 |
| Moka ... ... | 39.2 | 31.15 | 15.47 | 23.97 | 40.29 | 40.42 |
| Plaines Wilhems ... | 31.0 | 23.08 | 10.18 | 14.85 | 23.42 | 23.92 |
| Black River ... | 14.6 | 11.12 | 6.61 | 8.47 | 13.49 | 15.07 |
| Savanne ... ... | 59.8 | 47.39 | 22.04 | 33.95 | 55.71 | 61.36 |
| Grand Port ... | 67.3 | 50.33 | 21.99 | 30.82 | 54.43 | 64.98 |
| Total ... | 350.0 | 291.06 | 139.05 | 199.64 | 310.72 | 330.88 |

22nd December, 1947., 1947

A. DE SORNAY,
*Statistician.*

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